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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/786,283	05/10/2001	Andreas Ritschen	10191/1736	8294

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EXAMINER

JACKSON, BLANE J

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 11/10/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/786,283

Applicant(s)

RITSCHEN ET AL.

Examiner

Blane J Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Multi-band Radio Receiver

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over General Dynamics Corporation (hereafter "GDC", Patent Specification 1,190,459) with a view to Ahlemeyer et al. (U.S. Patent 4,888,815) and Hongu et al. (U.S. Patent 4,115,737).

As to claim 6, GDC discloses a radio receiver device (figure 1, page 6, lines 37-62), page 3, lines 26-34) including:

At least a first variably tunable tuning stage for a first receiving range and a second variably tunable tuning stage for a second receiving range, the first variably tunable tuning stage and the second variable tunable tuning stage being capable of

being switched separately (figure 1, stage (20, 24 and 22) and second stage (28, 32, 18), page 2, line 52 to line 94),

A changeover switch for providing an optional connection of one of the first variably tunable tuning stage and the second variably tuning stage with the frequency converter stage (physical switch (36) and band switching signal, page 2, lines 104-129),

A changeover device (band switches (34) and (36), page 2, lines 95-104),

One of two selected mixing oscillators for converting a received high frequency signal into a defined intermediate frequency where in accordance with an operation of the changeover device, a selected oscillator is changed over for the second oscillator in a tuning range to one of the first variably tunable tuning stage and the second variably tunable tuning stage in such a way that for the first receiving range of the first variably tunable tuning stage an oscillation frequency of the first variably tunable tuning stage is capable of being set above a frequency to be received by a quantity of the defined intermediate frequency and that for the second receiving range of the second variably tunable tuning unit an oscillation frequency of the second variably tunable tuning stage is capable of being set below the frequency to be received by the quantity of the defined intermediate frequency (changeover switch selected VFO band A (54) and VFO band B (56) would be designed to mix for a fixed IF output, such as the difference product, in accordance with the input band of frequencies of band A and B, page 5, line 117 to page 6, line 36).

GDC does not teach a single mixing oscillator for converting a high frequency first and second band into a defined IF.

Ahlemeyer teaches a radio receiver with a frequency synthesizer with coil switching circuits in the resonant tank of the variable frequency oscillator (VFO) to provide one of two selected frequency bands to the multi band RF and mixer circuitry (figure 1, (22), column 2, line 55 to column 3, line 1. Note the additional frequency doubler or tripler for the large high VHF and UHF band separations is not to be confused with the ability of the VCO itself to band shift). Since GDC teaches a receiver with a single mixer circuit providing multi band performance it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the two VCO system of GDC with the single band switched VCO configuration of Ahlemeyer to perform the same two band function with a reduction in circuit parts and circuit board space.

GDC teaches a receiving antenna switched between the first variably tunable tuning stage and the second variably tunable tuning stage (figure 1, antenna (10), page 2, lines 28-33) but does not teach a receiving antenna connected to the first and second variably tunable tuning stages.

Hongu teaches a receiving antenna is connected to a first and second tuned stages of a multiband tuner, but with switched band selection prior to the first stage (figure 1, column 1, lines 45-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to alternatively configure the antenna input circuit of GDC modified with the method of Hongu to simplify the design without loss in performance.

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As to claim 7, GDC modified teaches the mixing oscillator includes oscillator (resonant tank) coil selection and the mixing oscillator can be changed over (band selection) through switching to either coil value. Even though GDC modified does not teach a coil configuration where the inductive value is selectively switched at a tap point, it would have been obvious to one of ordinary skill in the art at the time of the invention to alternatively configure the resonant tank circuit of GDC with an alternative tap configuration due to design considerations but retain band switching based on a change in the coil value.

✓ As to claim 8, GDC of GDC modified teaches a radio receiver comprising a switch where the receiving antenna is capable of being switched effectively respectively via the inherent coupling capacitor and the switch only for the one of the first variable tunable tuning stage and the second variably tunable tuning stage connected with the frequency converter stage via the changeover device (figure 1, (34) where the band switch is electronic and coupling capacitors would necessarily be included to block VDC circuit currents from the antenna as well as for other well known purposes such as high pass filtering, page 2, lines 95-100).

As to claim 9, GDC of GDC modified teaches a radio receiver where the first variably tunable tuning stage includes a first tunable tuning circuit (20), a first amplifier stage (24) and a second tunable tuning circuit (22) and the second variably tunable

tuning circuit (second frequency band) includes a third tunable tuning circuit (28), a second amplifier stage (32) and a fourth tunable tuning circuit (18) (figure 1).

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PAGE 2, LINE 55
TO PAGE 3, LINE 89

As to claim 10, GDC of GDC modified teaches a radio receiver where the frequency converter stage includes:

- a mixing stage (mixer (44) and LO circuits, figure 1),
- an oscillator amplifier stage (62),
- an isolating amplifier (60),
- and a PLL stage ((46), page 3, lines 35-67).

GDC does not teach a PLL with a divider capable of being programmed via a data bus.

Ahlemeyer teaches a microprocessor based PLL that includes internal registers into which data is loaded for the purpose of programming the synthesizer's programmable divider (column 3, lines 4-7). Ahlemeyer specifically discloses a programmable ROM for storing a frequency matrix including the band frequency allocations organized by state to coordinate PLL control with frequencies (column 4, lines 12-44). It would have been obvious to one of ordinary skill at the time of the invention to update the system of GDC with the micro processor based PLL circuits of Ahlemeyer to changeably program the receive band frequencies and band switch control.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hanada (JP05335051) discloses a PLL circuit that switches coils in the resonant circuit of the VCO for band selection. Takada et al. (U.S. Patent 4,837,852) discloses electronic tuning circuits, the band pass filters and VCO tank circuit, for an AM receiver. Fischer et al. (U.S. Patent 4,802,238) discloses a radio receiver with switches to control the coil values in parallel with variable capacitors to select the operating frequency bands. Osburn et al. (U.S. Patent 5,428,829) discloses a method to tune the RF stages and VCO of a FM receiver.

The office would also makes note of the following document of particular relevance to the applicant's disclosure but is recognized to have an effective filling date after that of the applicant: Sheikh-Movahhed et al. U.S. Patent 6,178,315 B1.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is (703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

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BJJ



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